

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Rule 53(b) Divisional Application of
U.S. Serial No. 09/407,304

Applicant: **Yoshimi TOCHISHITA, et al.**

Serial No.: **Not Yet Assigned**

Group Art Unit: **1762 (prior)**

Filed: **June 19, 2001**

Examiner: **T. Meeks (prior)**

For: **SURFACE-TREATING HOLDER HAVING TUBULAR STRUCTURE AND
METHOD USING THE SAME (As amended)**

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Date: June 19, 2001

Sir:

Prior to calculation of the filing fee and examination of this application, please amend the
above-identified application as follows:

IN THE TITLE:

Please amend the title to read:

~~—SURFACE-TREATING HOLDER HAVING TUBULAR STRUCTURE AND
METHOD USING THE SAME—.~~

IN THE ABSTRACT:

Please substitute the attached Abstract of the Disclosure.

IN THE SPECIFICATION:

Please amend the specification as follows:

In re the Rule 1.53(b) Divisional Application of U.S. Serial No. 09/407,304
Applicants: Yoshimi TOCHISHITA, et al.
Docket No.: 991074A

Please replace the paragraph beginning at page 1, line 6, with the following rewritten paragraph:

The present invention relates to a surface treating process, and in particular, a surface treating process for forming a deposited film of a metal such as aluminum, zinc and tin, or a metal nitride such as titanium nitride on the surface of a sintered product such as, for example, a rare earth metal-based magnet liable to be oxidized, and the like, thereby ensuring that the sintered product such as the rare earth metal-based magnet has an oxidation resistance.

Please replace the paragraph beginning at page 2, line 12, with the following rewritten paragraph:

In the above conventional surface treating process, however, the substantially uniform vapor-deposition can be performed certainly. However, because the works are piled one on another within the cage-like container, it cannot be avoided that some deposition nonuniformity is produced. Therefore, it has been desired to propose a surface treating process by which a further uniform surface treatment can be performed. Many of rare earth metal-based magnet articles such as Nd-Fe-B based magnet articles, for example, resulting from the processing treatment, are rectangular parallelepiped, hard and moreover, have sharp corners. For this reason, the following problem is arisen: The corners collide with one another during the vapor deposition treatment, whereby the deposited film on the surface is peeled off and in a severe case, the corners of a product are chipped, resulting in a poor yield. Particularly, in a case of a large-sized article, there is a problem that the

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weight is large, and the collision energy is large, resulting in an extremely reduced yield. In a case of a work having an inside diameter portion and having a shape such as a ring-like shape and the like, there is a disadvantage that the inside diameter side of the work is occluded by the other work and for this reason, the uniform surface treatment of the inside diameter side cannot be achieved successfully.

Please replace the paragraph beginning at page 7, line 16, with the following rewritten paragraph:

In addition, by winding the entanglement preventing spring around that portion of the wire which forms the side face of the tubular structure, the wires forming the holders can be prevented from entering a clearance defined between both of the wires, whereby the entanglement of the wires forming the holders with one another is prevented.

Please replace the paragraph beginning at page 12, line 19, with the following rewritten paragraph:

Thus, by such uniform surface treatment of the works in the spaced-apart states, a film of a soft metal such as aluminum, tin and zinc or a hard metal nitride such as titanium nitride can be deposited uniformly even on a hard and brittle sintered article.

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Please replace the paragraph beginning at page 15, line 21, with the following rewritten paragraph:

According to a thirty eighth aspect and feature of the present invention, there is provided a surface treating apparatus, comprising a treating material source provided within a treating chamber, so that a treating material released from the treating material source is delivered to reach works for a surface treatment, and a means for rotating a support member supporting the works about a rotational axis.

Please replace the paragraph beginning at page 16, line 5, with the following rewritten paragraph:

According to a fortieth aspect and feature of the present invention, there is provided a surface treating apparatus, comprising a treating material source provided with in a treating chamber, so that a treating material released from the treating material source is delivered to reach works for a surface treatment, and a means for rotating a support member supporting the works about its axis and about a rotational axis.

IN THE CLAIMS:

Please cancel claims 1-3 and 10-45 without prejudice or disclaimer.

Please add new claim 46 as follows:

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46. (New) A process for surface-treating a plurality of works comprising the steps of accommodating the works in a holder, surface treating the works accommodated in the holder while being rotated about an axis of the works, the holder comprising a wire which is coiled at distances in such a manner that it is formed as a spring-like tubular structure having spiral-line faces at opposite ends thereof, so that said works are accommodated in said tubular structure.

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REMARKS

Claims 4-9 and 46 are pending. Prompt and favorable action on the merits is earnestly solicited.

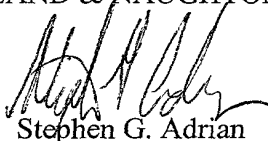
A marked-up version of the amendments to the specification is attached and entitled "VERSION WITH MARKINGS TO SHOW CHANGES MADE." Also attached is a substitute Abstract of the Disclosure.

Should the Examiner deem that any further action by applicant would be desirable to place the application in better condition for allowance, the Examiner is encouraged to telephone applicant's undersigned attorney.

In the event that any fees are due in connection with this paper, please charge our Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN, HATTORI,
McLELAND & NAUGHTON, LLP



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Enclosures: Version with Markings to Show Changes Made
Substitute Abstract of the Disclosure
Information Disclosure Statement

VERSION WITH MARKINGS TO SHOW CHANGES MADE

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of U.S. Serial No.: 09/407,304

IN THE SPECIFICATION:

The paragraph beginning at page 1, line 6, has been amended as follows:

The present invention relates to a surface treating process, and in particular, a surface treating process for forming a deposited film of a metal such as aluminum, zinc and tin, or a metal nitride such as titanium nitride on the surface of a sintered product such as, for example, a rare earth metal-based magnet liable to be oxidized, and the like, thereby ensuring that the sintered product such as the rare earth metal-based magnet has [a] an oxidation resistance.

The paragraph beginning at page 2, line 12, has been amended as follows:

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of a work having an inside diameter portion and having a shape such as a ring-like shape and the like, there is a disadvantage that the inside diameter side of the work is occluded by the other work and for this reason, the uniform surface treatment of the inside diameter side cannot be achieved successfully.

The paragraph beginning at page 7, line 16, has been amended as follows:

In addition, by winding the entanglement preventing spring around [the] that portion of the wire which forms the side face of the tubular structure, the wires forming the holders can be prevented from entering a clearance defined between both of the wires, whereby the entanglement of the wires forming the holders with one another is prevented.

The paragraph beginning at page 12, line 19, has been amended as follows:

Thus, by such [the] uniform surface treatment of the works in the spaced-apart states, a film of a soft metal such as aluminum, tin and zinc or a hard metal nitride such as titanium nitride can be deposited uniformly even on a hard and brittle sintered article.

The paragraph beginning at page 15, line 21, has been amended as follows:

According to a thirty [eight] eighth aspect and feature of the present invention, there is provided a surface treating apparatus, comprising a treating material source provided within a treating chamber, so that a treating material released from the treating material source is delivered

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to reach works for a surface treatment, and a means for rotating a support member supporting the works about a rotational axis.

The paragraph beginning at page 16, line 5, has been amended as follows:

According to a [forty] fortieth aspect and feature of the present invention, there is provided a surface treating apparatus, comprising a treating material source provided with in a treating chamber, so that a treating material released from the treating material source is delivered to reach works for a surface treatment, and a means for rotating a support member supporting the works about its axis and about a rotational axis.

09/407,304 "EE" 09/407,304

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